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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,651	07/22/2003	Naoki Kubo	0378-0400P	4744
2292 7590 06/21/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER TRAN, NHAN T	
			ART UNIT 2622	PAPER NUMBER
			NOTIFICATION DATE 06/21/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/623,651	<b>Applicant(s)</b> KUBO, NAOKI	
	<b>Examiner</b> Nhan T. Tran	<b>Art Unit</b> 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 7/22/2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Claim Objections***

3. Claim 7 is objected to because of the recitation of "a edge" in line 8 of claim 7. This should be corrected to read as -- an edge --. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada Koichi (JP 9205589) in view of Shirakawa (US 6,937,777).

Regarding claim 1, Harada discloses a solid-state image pickup apparatus (Fig. 1 and abstract) comprising:

a plurality of photo-sensors (pixels 1) arranged in a direction of row and a direction of column (Fig. 1), each of said plurality of photo-sensors corresponding to a particular pixel included in an imaging frame, each of said plurality of photo-sensors comprising a first photosensitive cell (12b) having first sensitivity for photoelectrically transducing incident light to generate a signal charge and a second photosensitive cell (12a) having second sensitivity lower than the first sensitivity for photoelectrically transducing incident light to generate a signal charge (see Fig. 2; abstract and [0011]-[0012]);

Harada does not explicitly teach a corrector executing shading correction on a first image signal derived from said first photosensitive cell in accordance with a shading characteristic of said first photosensitive cell, and on a second image signal derived from said second photosensitive cell in accordance with a shading characteristic of said second photosensitive cell.

However, as taught by Shirakawa, an imaging apparatus comprises a corrector which stores shading correction coefficients, each corresponding to each pixel in a two-dimensional matrix of an image sensor so as to accurately perform shading correction to each image signal derived from every pixel so that sensitivity non-uniformity on the image sensor can be removed, thereby enhancing image quality (see Shirakawa, col. 3, line 48 – col. 4, line 16).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the image pickup apparatus of Harada to include a shading corrector as taught by Shirakawa for executing shading correction on a first image signal derived from said first photosensitive cell in accordance with a shading characteristic of said first photosensitive cell, and on a second image signal derived from said second photosensitive cell in accordance with a shading characteristic of said second photosensitive cell so that sensitivity non-uniformity on the image sensor would be removed, thereby enhancing image quality.

Regarding claim 2, the combined teachings of Harada and Shirakawa as analyzed in claim 1 discloses that said corrector corrects the first image signal with first shading correction data assigned to said first photosensitive cell and the second image signal with second shading correction data assigned to said second photosensitive cell (each shading correction coefficient is designated for each pixel as disclosed in Shirakawa, col. 3, line 64 – col. 4, line 16).

Regarding claims 3 & 4, it is also clearly seen in Fig. 1 of Harada that each of said plurality of photo-sensors is arranged at a fixed pitch in the direction of row and the direction of column in a substantially square matrix.

5. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada Koichi (JP 9205589) and Shirakawa (US 6,937,777) and in further view of Ochi (US 4,558,365).

Regarding claims 5 & 6, Harada and Shirakawa do not teach that each of said plurality of photo-sensors is shifted from adjoining one of said plurality of photo-sensors by a distance substantially corresponding to a single photo-sensor in the direction of row and the direction of column.

Ochi teaches an image sensor having each of pixels being shifted from adjoining one of a plurality of pixels by a distance substantially corresponding to a single pixel in the direction of row and column (Figs. 3 & 4) so that the image sensor with high resolution and high sensitivity is realized (see Ochi, col. 2, lines 26-31).

Therefore, it would have been obvious to one of ordinary skill in the art to further reconfigure the image pickup apparatus in Harada and Shirakawa by shifting each pixel from the adjoining pixels by a distance substantially corresponding to a single pixel in the direction of row and column as taught by Ochi so as to improve resolution and sensitivity of the image pickup apparatus.

Regarding claim 7, the combined teachings of Harada, Shirakawa and Ochi as analyzed in claims 1 & 5 would also disclose all limitations of claim 7 in which each of said plurality of photo-sensors are shifted from adjoining one of said plurality of photo-sensors by a distance substantially corresponding to a single photo-sensor in the

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direction of row and the direction of column (see claim 5), said first photosensitive cell and said second photosensitive cell of each of said plurality of photo-sensors being positioned closer to a center and a edge of the imaging frame, respectively (see Fig. 2 of Harada, wherein the first cell 12b is positioned closer to the center while the second cell 12a is positioned closer to an edge of the sensor frame), said corrector correcting the first image signal and the second image signal in accordance with a shading characteristic common to said first photosensitive cell and said second photosensitive cell (this is realized after the first image signal having higher sensitivity is added to the second image signal having a lower sensitivity as described by Harada in abstract, Fig. 6, [0024] and then the added image signal is undergone common shading correction in view of the teaching of Shirakawa as discussed in claim 1).

Regarding claims 8-10, these claims are also met by the analysis of claim 7.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Tran whose telephone number is (571) 272-7371. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Nhan Tran', with a long, sweeping horizontal stroke extending to the right.

NHAN T. TRAN  
Patent Examiner